Health Insurance Cost prediction Using Watson Auto AI

S.No.	TOPICS
1.	INTRODUCTION TO IBM WATSON
2.	LITERATURE SURVEY .Existing problem .proposed solution
3.	THEORITICAL ANALYSIS .BLOCK DIAGRAM
4.	EXPERIMENTAL INVESTIGATIONS .Data Collection .IBM Cloud Account -login -create watson studio platform -add machine learning service .Model Building -create project -select pipeline -test model .Application Building -create nodered service -go to pallete and add dashboard nodes -build ui with nodered
5.	ADVANTAGES
6.	FUTURE SCOPE
7.	BIBLIOGRAPHY

1.INTRODUCTION TO IBM WATSON

Watson is a question-answering computer system capable of answering questions posed in natural language, developed in IBM's DeepQA project by a research team led by principal investigator David Ferrucci. Watson was named after IBM's founder and first CEO, industrialist Thomas J. Watson.

The computer system was initially developed to answer questions on the quiz show *Jeopardy!* and, in 2011, the Watson computer system competed on *Jeopardy!* against champions Brad Rutter and Ken Jennings,winning the first place prize of $1 million.

In February 2013, IBM announced that Watson software system's first commercial application would be for utilization management decisions in lung cancer treatment at Memorial Sloan Kettering Cancer Center, New York City, in conjunction with WellPoint (now Anthem). In 2013, Manoj Saxena, IBM Watson's business chief said that 90% of nurses in the field who use Watson now follow its guidance.

2.LITERATURE SURVEY

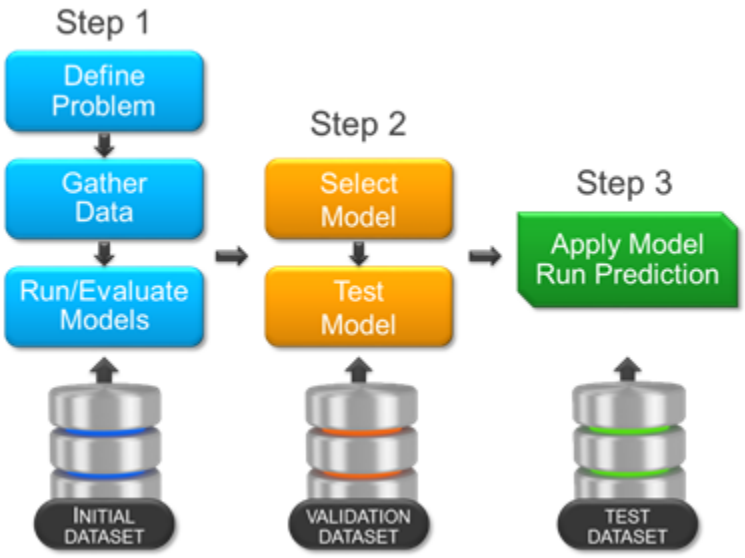
project description:-

Health Insurance companies have a tough task at determining premiums for their customers.While the health care law in any country does have some rules for companies to follow todetermine premiums, it’s really up to the companies on what factor/s they want to hold moreweightage. Companies should know the most important factors and how much statisticalimportance do they hold.

solution:-

The main aim of this project is to create a model based on statistically significant factors (independent variable) which will affect premiums charges (dependent variable) by an insurance company. In this project we are using Multi Linear regression for the accurate prediction. An application is also build in Auto AI Service in IBM Cloud which can be interlinked with the model so as to view the result on UI based on input parameters.

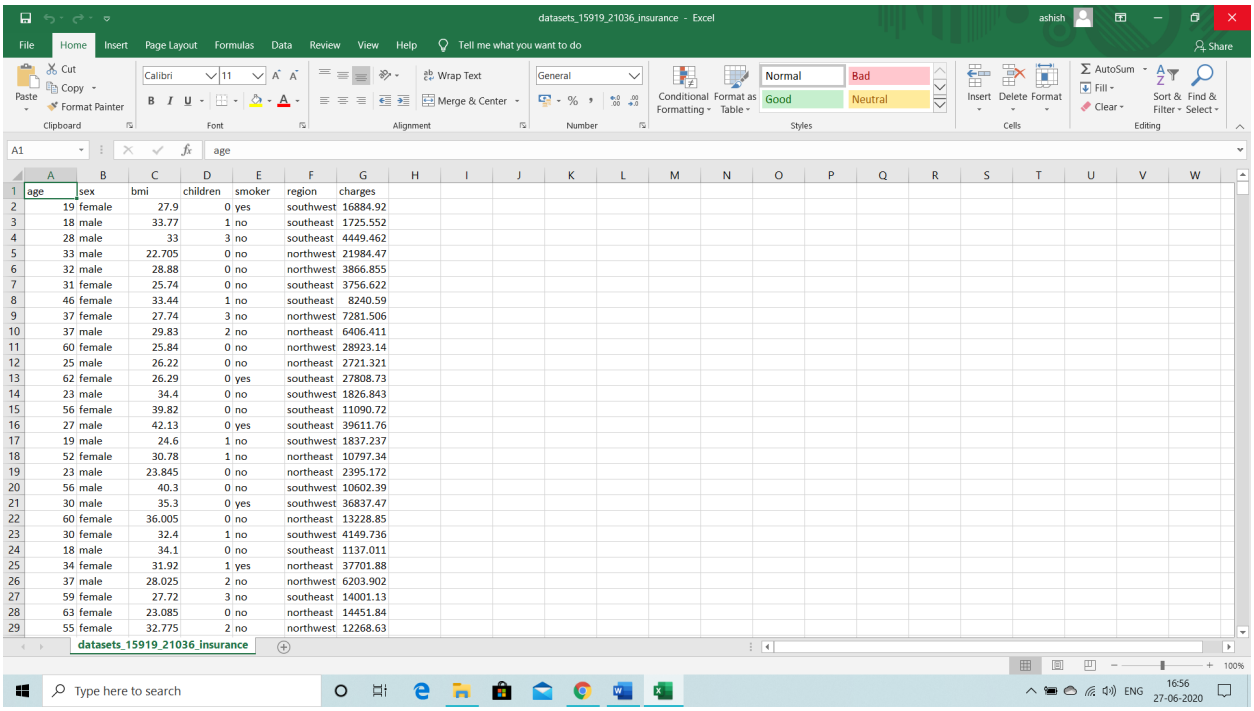
3.BLOCK DIAGRAM



4.EXPERIMENTAL INVESTIGATION

.DATA COLLECTION

STEP 1:- collection of dataset



age	sex	bmi	children	smoker	region	charges
19	female	27.9	0	yes	southwest	16884.92
18	male	33.77	1	no	southeast	1725.552
28	male	33	3	no	southeast	4449.462
33	male	22.705	0	no	northwest	21984.47
32	male	28.88	0	no	northwest	3866.855
31	female	25.74	0	no	southeast	3756.622
46	female	33.44	1	no	southeast	8240.59
37	female	27.74	3	no	northwest	7281.506
37	male	29.83	2	no	northeast	6406.411
60	female	25.84	0	no	northwest	28923.14
25	male	26.22	0	no	northeast	2721.321
62	female	26.29	0	yes	southeast	27808.73
23	male	34.4	0	no	southwest	1826.843
56	female	39.82	0	no	southeast	11090.72
27	male	42.13	0	yes	southeast	39611.76
19	male	24.6	1	no	southwest	1837.237
52	female	30.78	1	no	northeast	10797.34
23	male	23.845	0	no	northeast	2395.172
56	male	40.3	0	no	southwest	10602.39
30	male	35.3	0	yes	southwest	36837.47
60	female	36.005	0	no	northeast	13228.85
30	female	32.4	1	no	southwest	4149.736
18	male	34.1	0	no	southeast	1137.011
34	female	31.92	1	yes	northeast	37701.88
37	male	28.025	2	no	northwest	6203.902
59	female	27.72	3	no	southeast	14001.13
63	female	23.085	0	no	northeast	14451.84
55	female	32.775	2	no	northwest	12268.63

STEP 2:-Refine or preprocess dataset

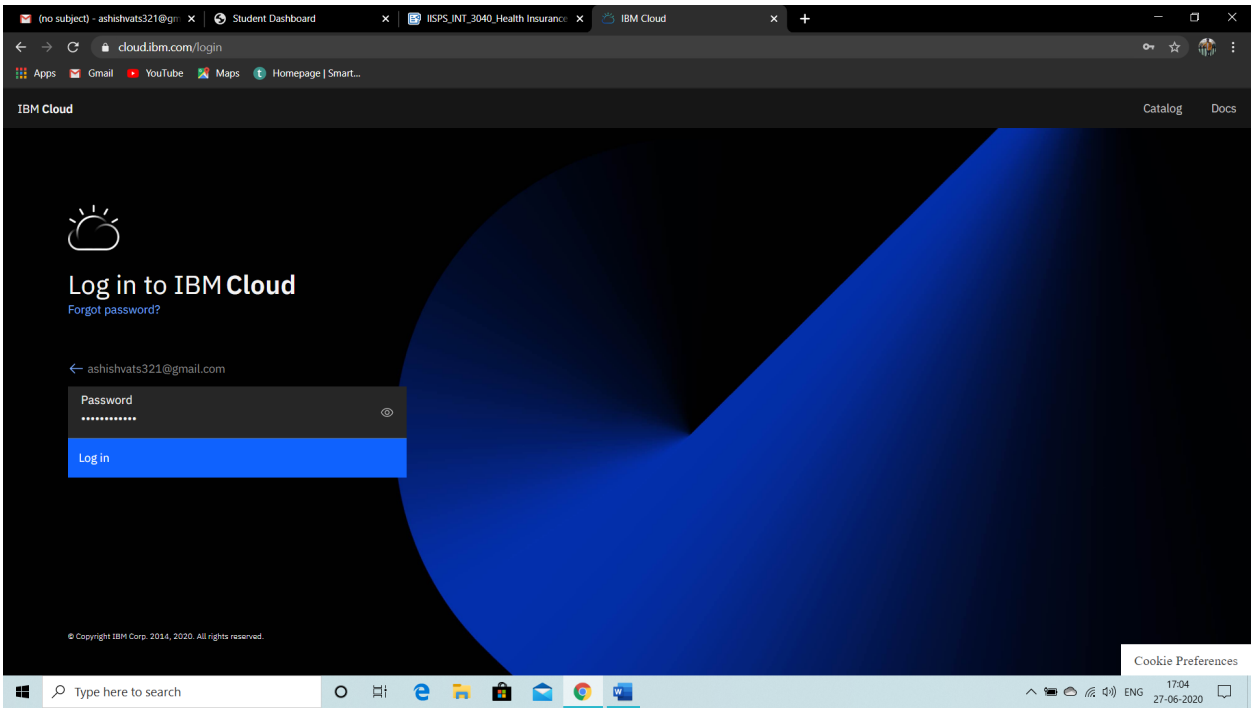
Dataset can be downloaded from many platforms like kaggel. It can olso be created by our own. After getting appropriate dataset we have to analyze to preprocess it to get our predictions.
This is the dataset I have used. It contains about 7 colums and 1339 rows.

.IBM CLOUD ACCOUNT

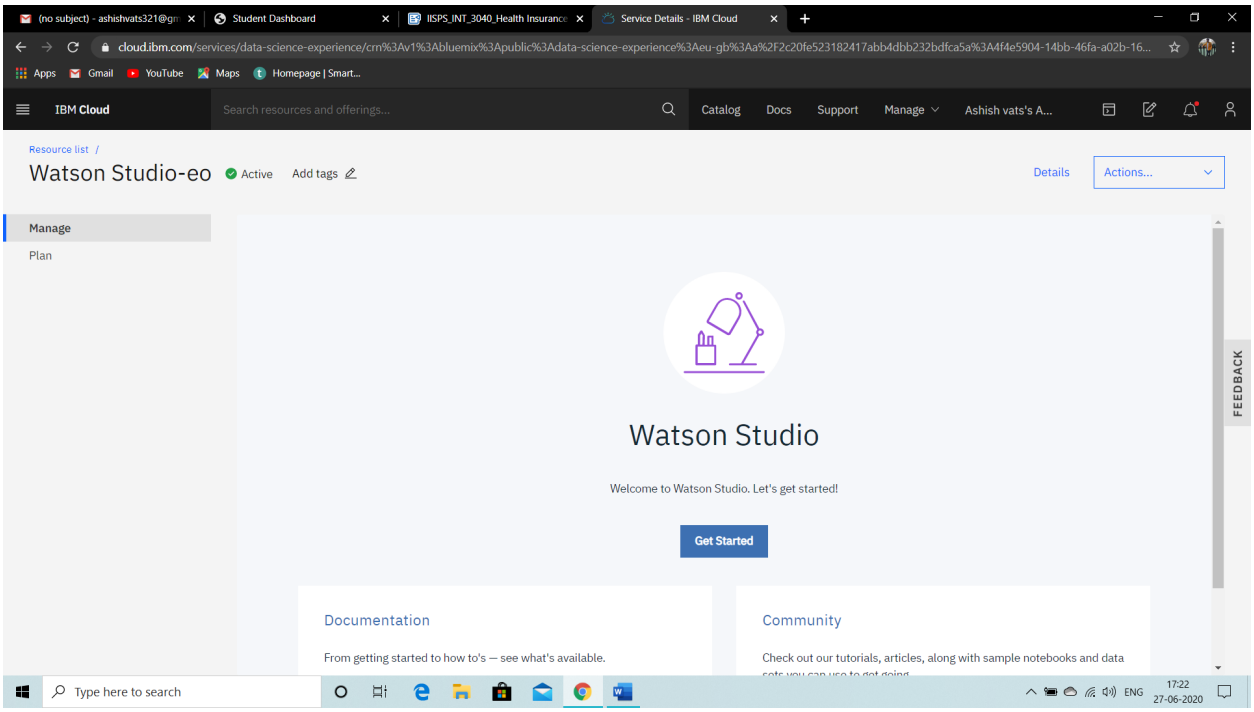
STEP 1:-Register to make an ibm account

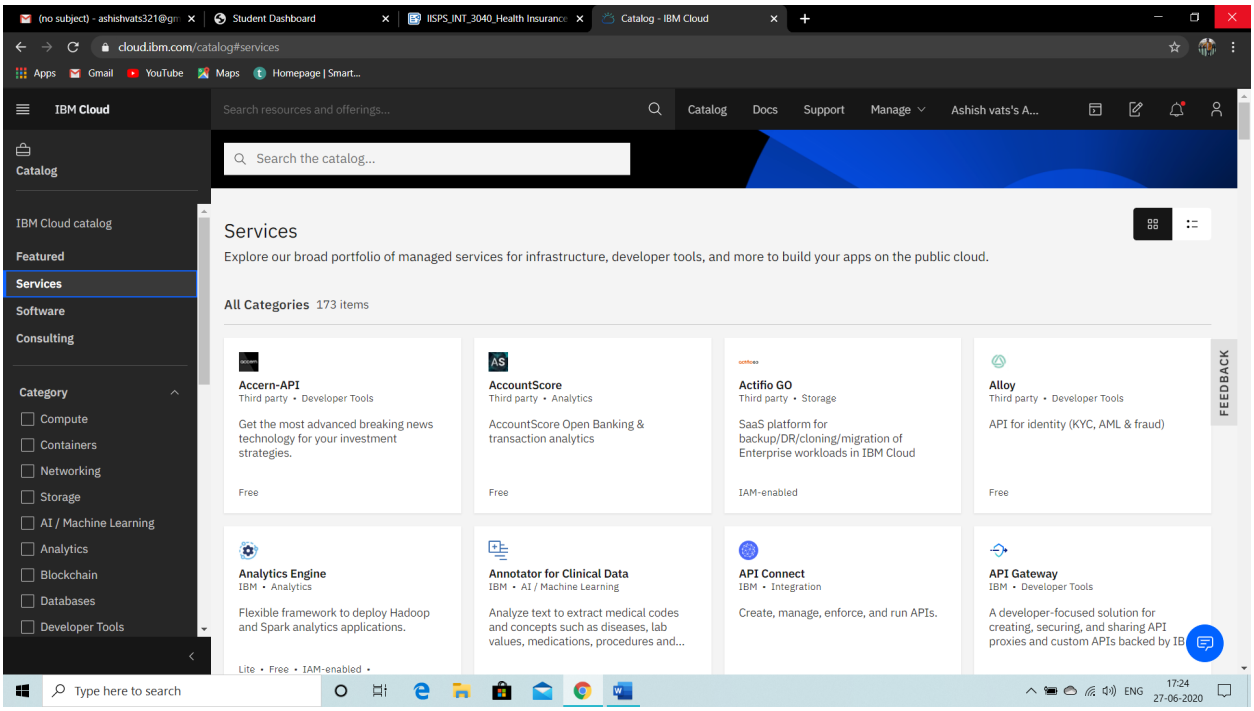
Link for registration----https://cloud.ibm.com/registration

STEP 2:-LOGIN



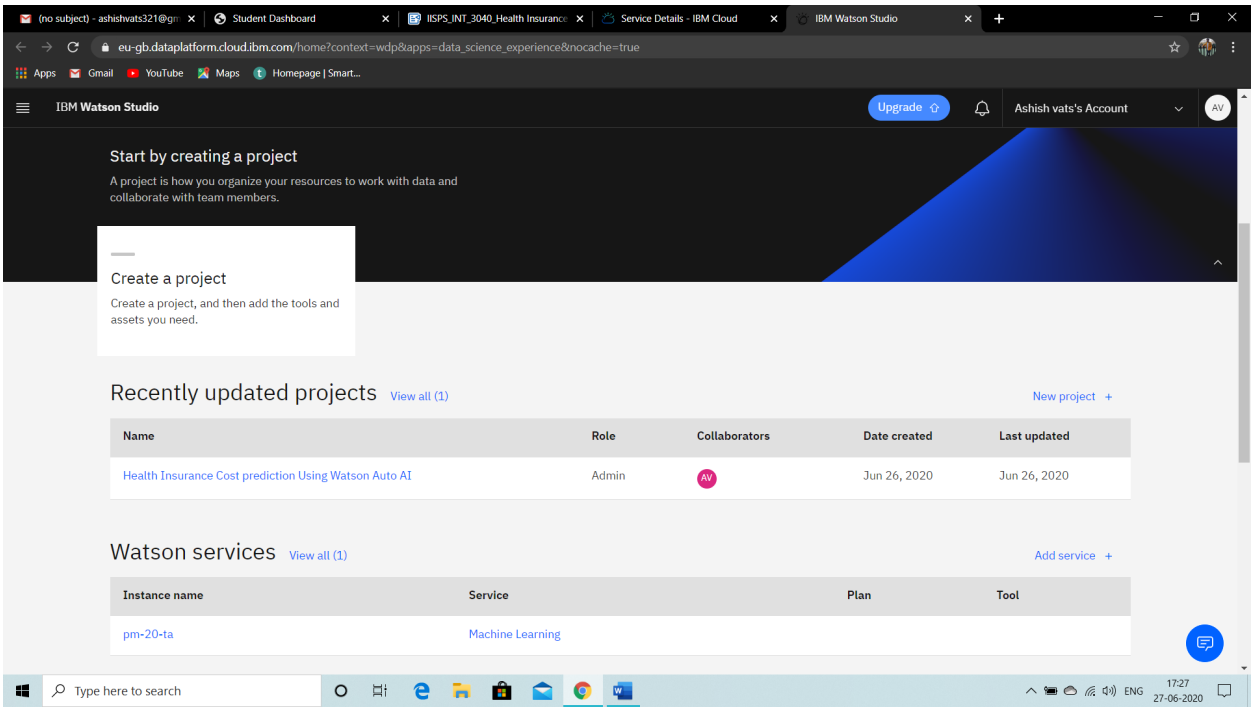
STEP 3:- Create a watson studio platform and add a machine learning service to it.

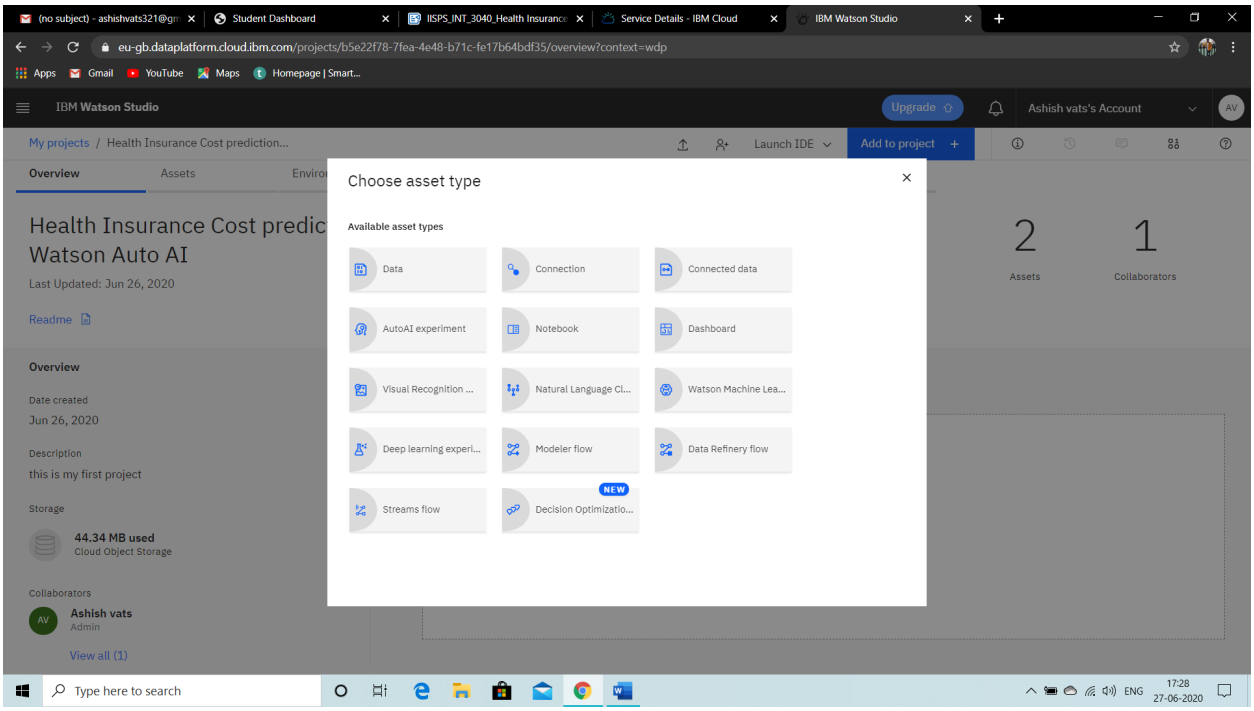




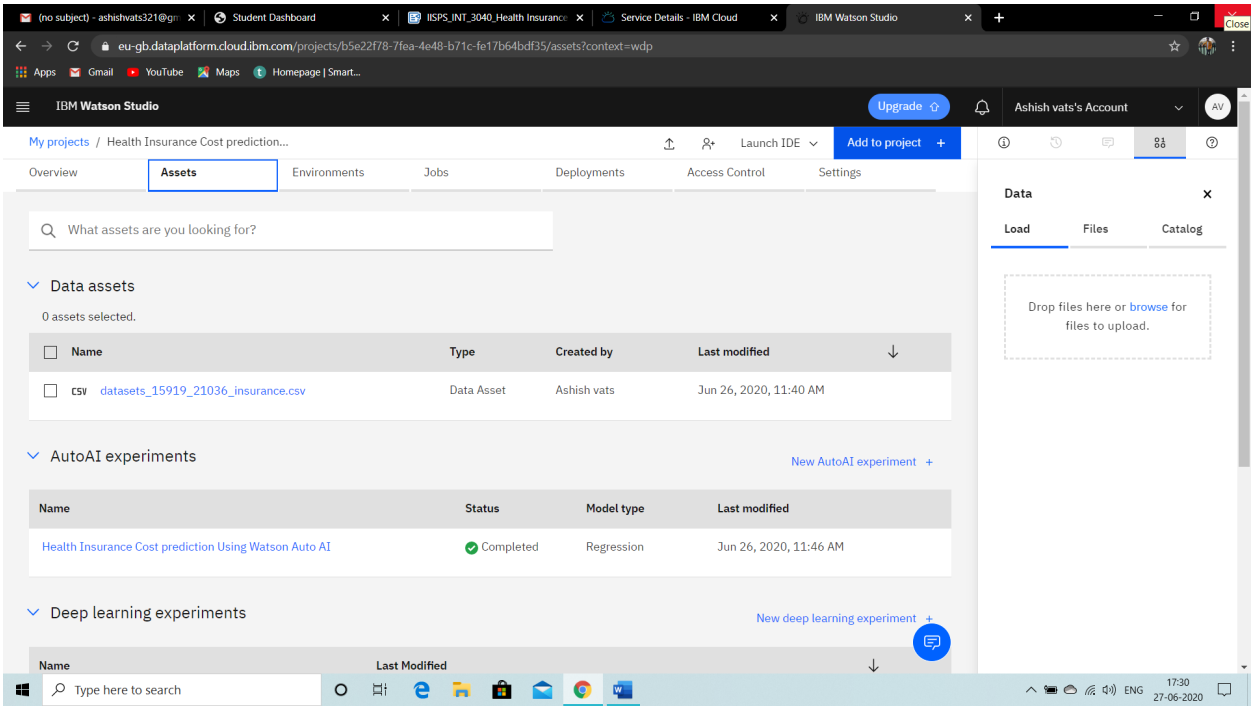
.MODEL BUILDING

STEP 1:- Create project using watson platform and add auto ai in add projects



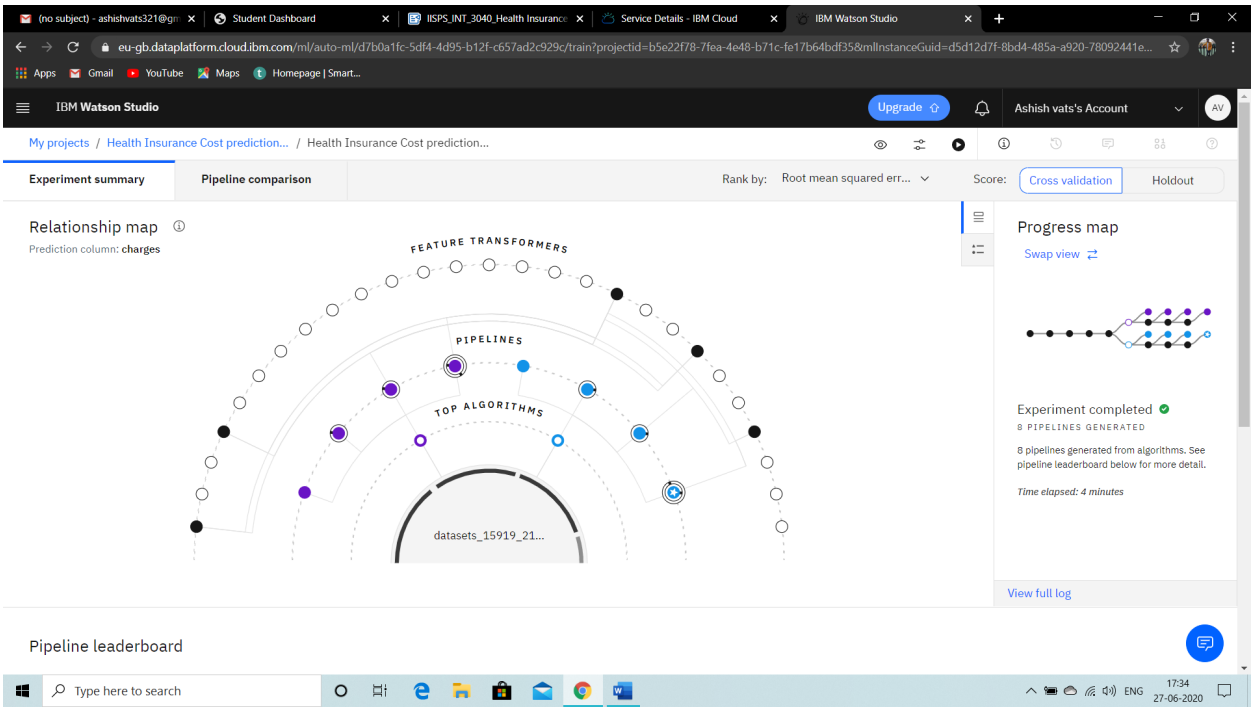


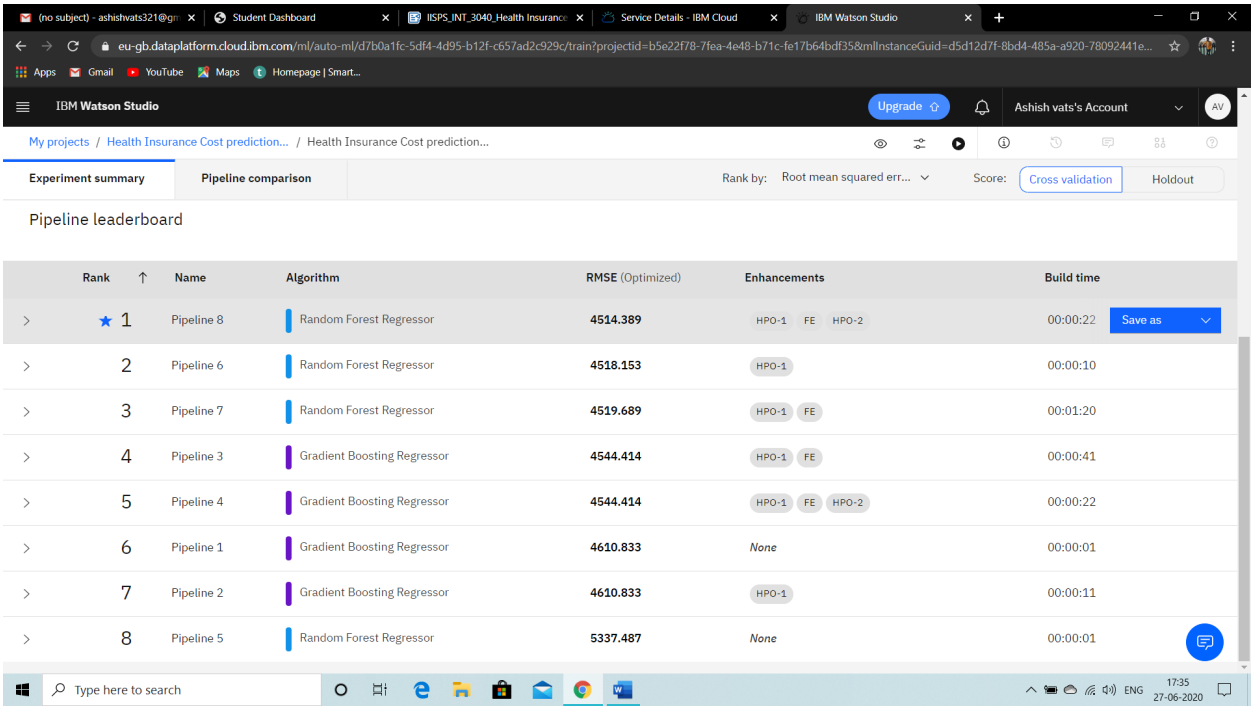
STEP 2:- Import Dataset



We need to import or add the data in csv form which works as an asset for the model.

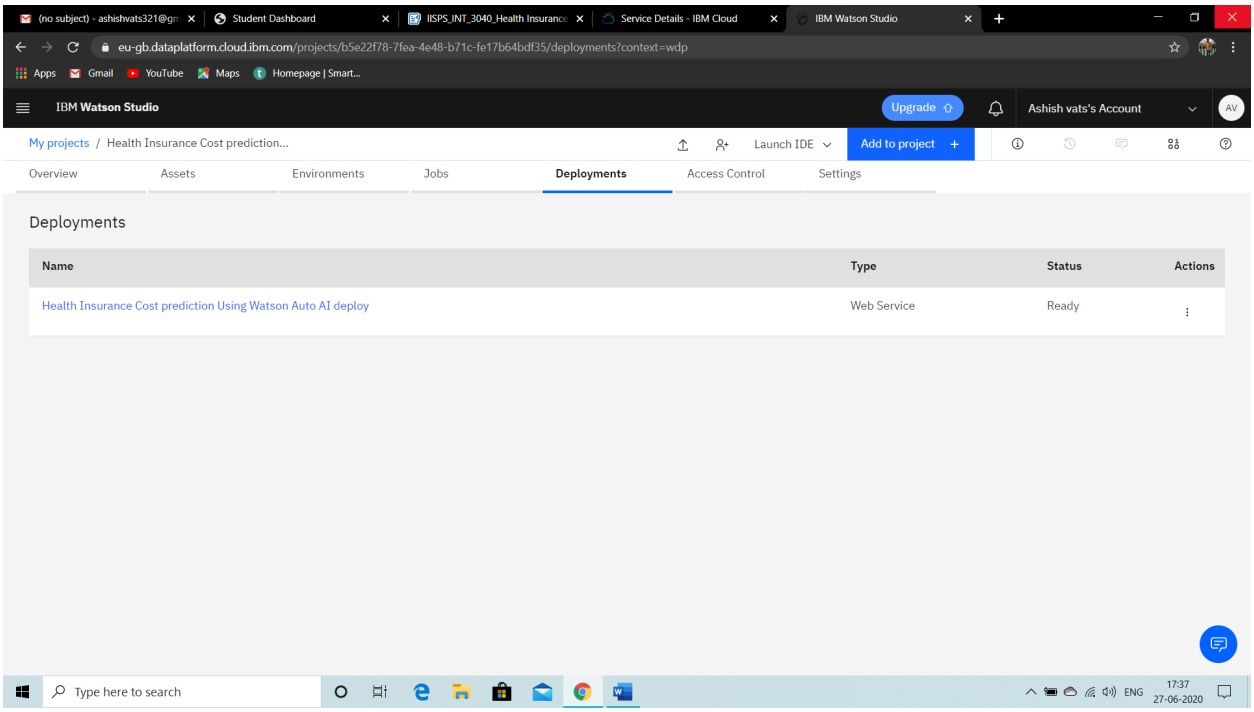
STEP 3: - Run the model and pick the best pipeline for better accuracy.

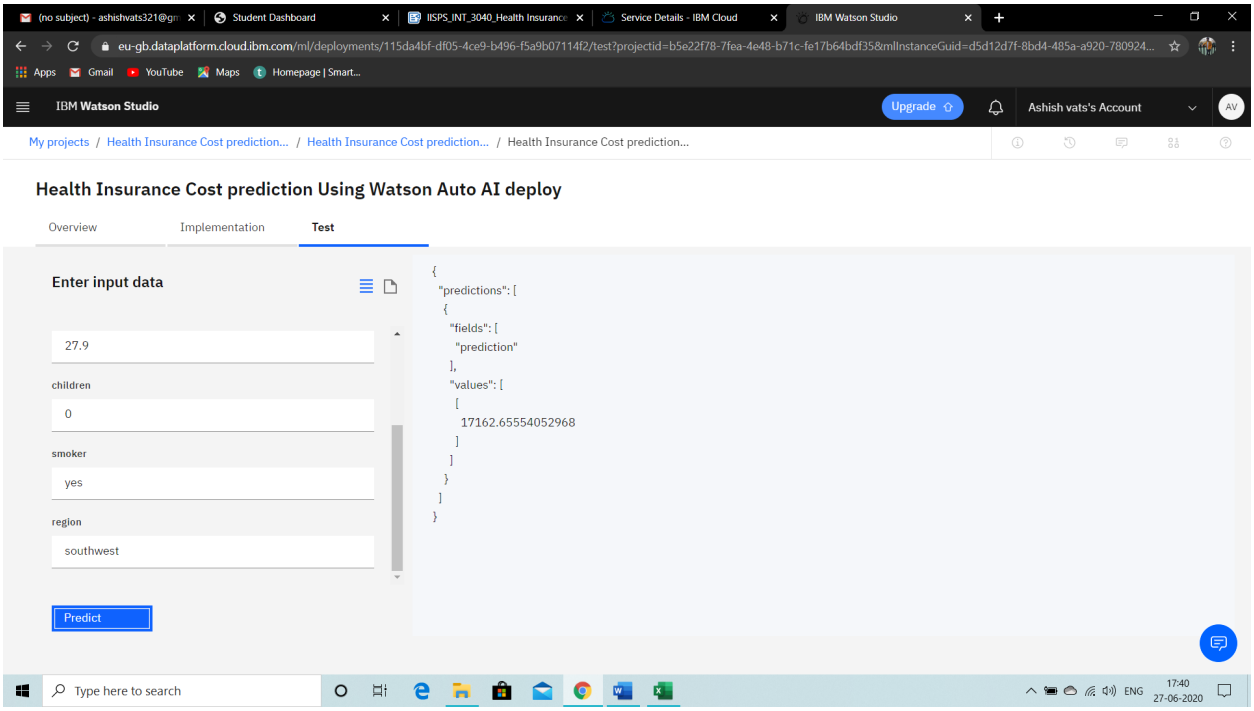




Rank	Name	Algorithm	RMSE (Optimized)	Enhancements	Build time
★ 1	Pipeline 8	Random Forest Regressor	4514.389	HPO-1 FE HPO-2	00:00:22
2	Pipeline 6	Random Forest Regressor	4518.153	HPO-1	00:00:10
3	Pipeline 7	Random Forest Regressor	4519.689	HPO-1 FE	00:01:20
4	Pipeline 3	Gradient Boosting Regressor	4544.414	HPO-1 FE	00:00:41
5	Pipeline 4	Gradient Boosting Regressor	4544.414	HPO-1 FE HPO-2	00:00:22
6	Pipeline 1	Gradient Boosting Regressor	4610.833	None	00:00:01
7	Pipeline 2	Gradient Boosting Regressor	4610.833	HPO-1	00:00:11
8	Pipeline 5	Random Forest Regressor	5337.487	None	00:00:01

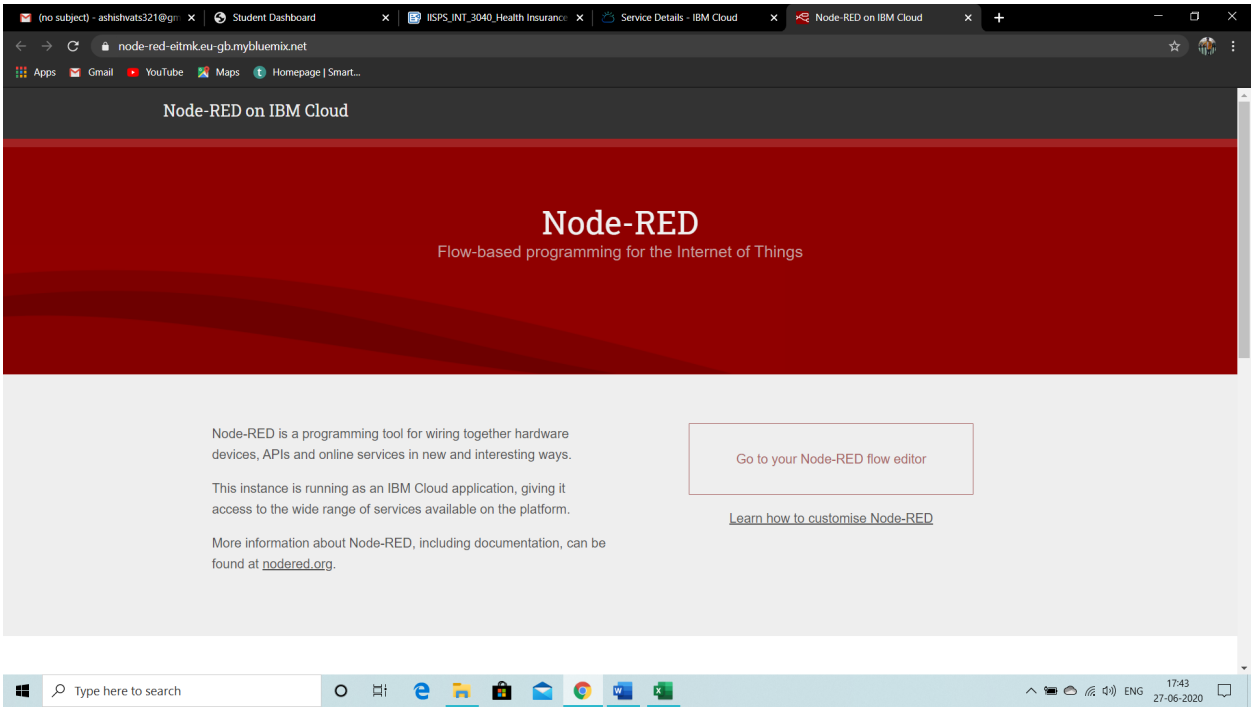
STEP 4- Deploy and test the model





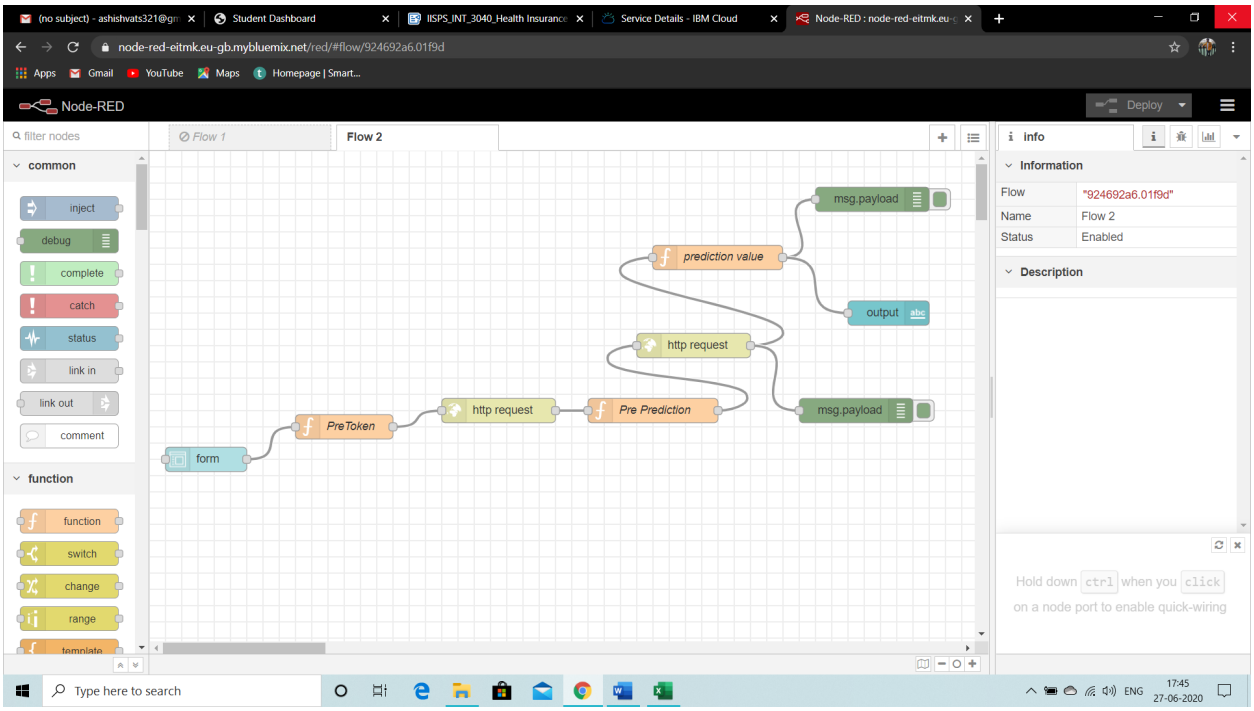
.MODEL BUILDING

STEP 1:-Create node red service



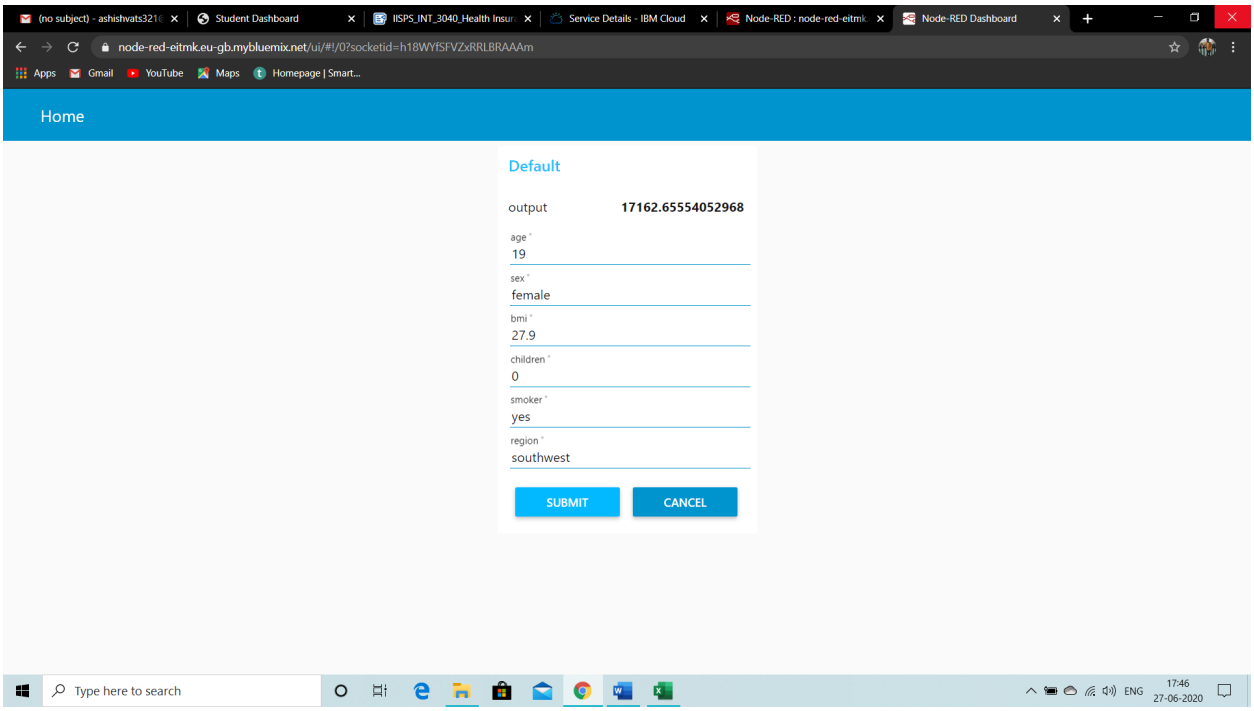
Select the cloud foundry apps and create node red

STEP 2 :- Use node red editor and import the Json file and make a flow



After this flow is made we have to insert the column names , url, api key in the design pallets.

STEP 3- Deploy the flow and create ui.



5.ADVANTAGES

The Benefits of using a health insurance premium calculator :-

1. They simplify the complex calculations of health insurance premium providing a quick result of the health insurance quote to the policy buyer.

2. Knowing a tentative amount of the medical insurance premium makes it easier to plan a financial schedule.

3. There are some online calculators available that suggest different health insurance plans. Buyers can consider such pre-compared policies to ensure if they policy they are willing to buy possesses all the requirements.

4. The health insurance premium calculators come up with different parameters that can be calibrated to reach the optimum sum of the premium payment suitable to the financial status of the purchaser.

6.FUTURE SCOPE

An intelligent predictive health insurance cost preddictor model will allow a client to compare the cost . The health insurance premium calculators come up with different parameters that can be calibrated to reach the optimum sum of the premium payment suitable to the financial status of the purchaser.this model will help the client to overcome the complexity of the various plans and will provide the client with the best cost for the insurance and let the client take the appropriate insurance from the company.

7.BIBLIOGRAPHY

This project health insurance cost predictor is done by me. I have made this under guidance of smartinternz experts. I have taken help of below platforms for succesfully completing the project i.e.

.SMARTINTERNZ
.IBM CLOUD
.IBM WATSON STUDIO
.GITHUB

THANK YOU.